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Defining Bicategories of Fractions with Small Hom Sets

This work grew out of the question of building a mapping object for orbifolds. The bicategory of orbifolds is a bicategory of fractions of proper etale groupoids with respect to the class of essential equivalences. A priori, the hom categories in this category are extremely large and somewhat mysterious, since the essential equivalences over a given groupoid form a proper class.

I will discuss categorical conditions which allow us to better understand constructions like these. We develop weaker conditions for a bicalulus of fractions to exist, and show how this can be used to pass to a small subclass of arrows to be inverted. Time permitting, I will talk about how to use pseudo pullbacks to simplify the 2-cell constructions and compositions in the resulting bicategory of fractions.

This is joint work with D. Pronk at Dalhousie University.